“Autonomous observations in the tropical Atlantic surface salinity maximum in tests of wind driven circulation theories”

Analysis of salinity, temperature and 3-d velocity data from SVP-SSS and Profiling ADOS drifters in SPURS

by

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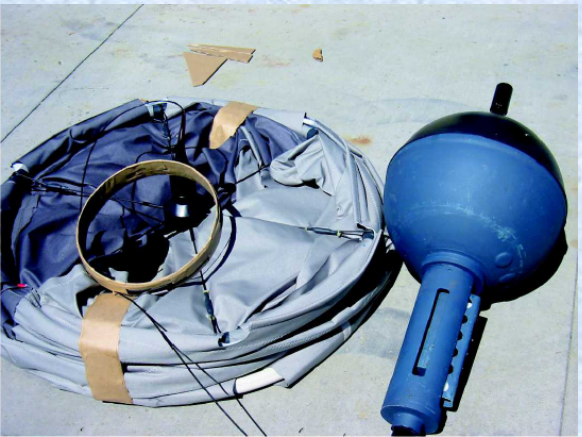
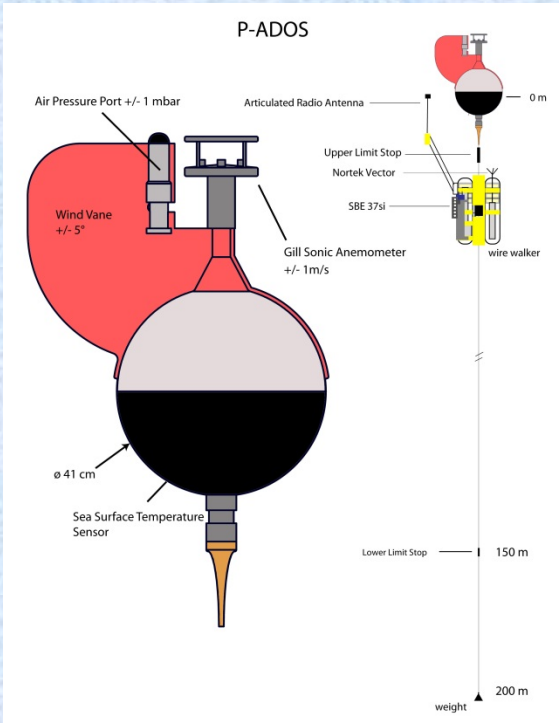
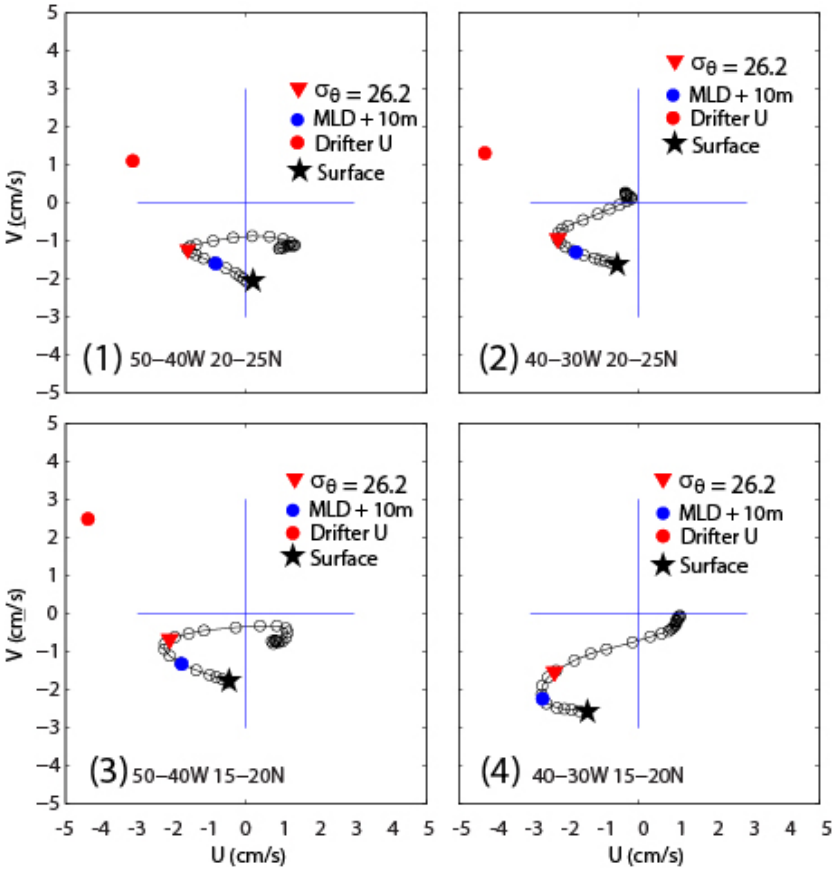


5 SLIDES ALLOWANCE:
1)WHY; 2)WHAT; 3+4) HOW; 5)WHEN.

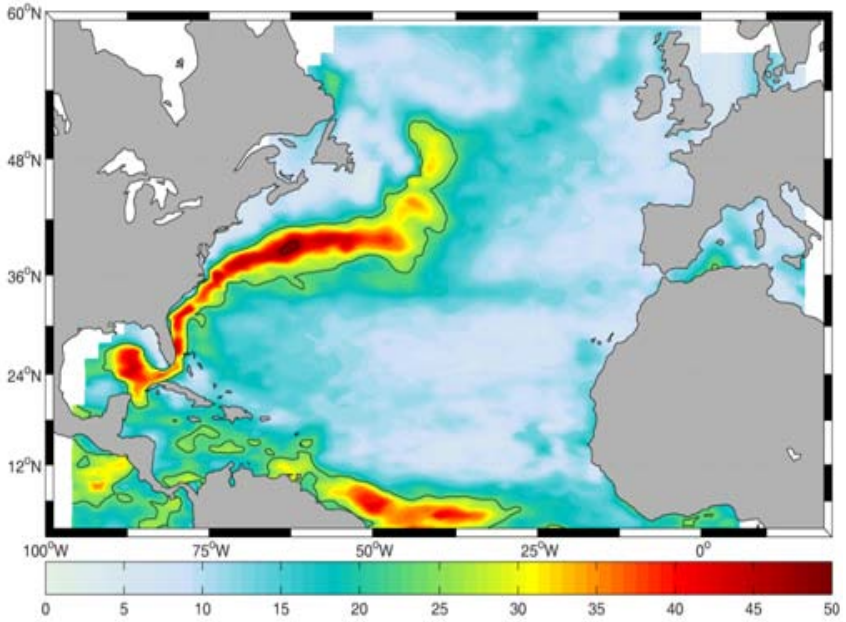


WHY?

TOPIC 1: Shallow MOC. The fall period absolute geostrophic hodographs referenced to absolute sea level (Maximenko et al. 2009). The red "dot" is the 15m velocity derived from drifter data .



TOPIC 2: Eddy fluxes (S,T, V). Rms eddy velocity (drifters)



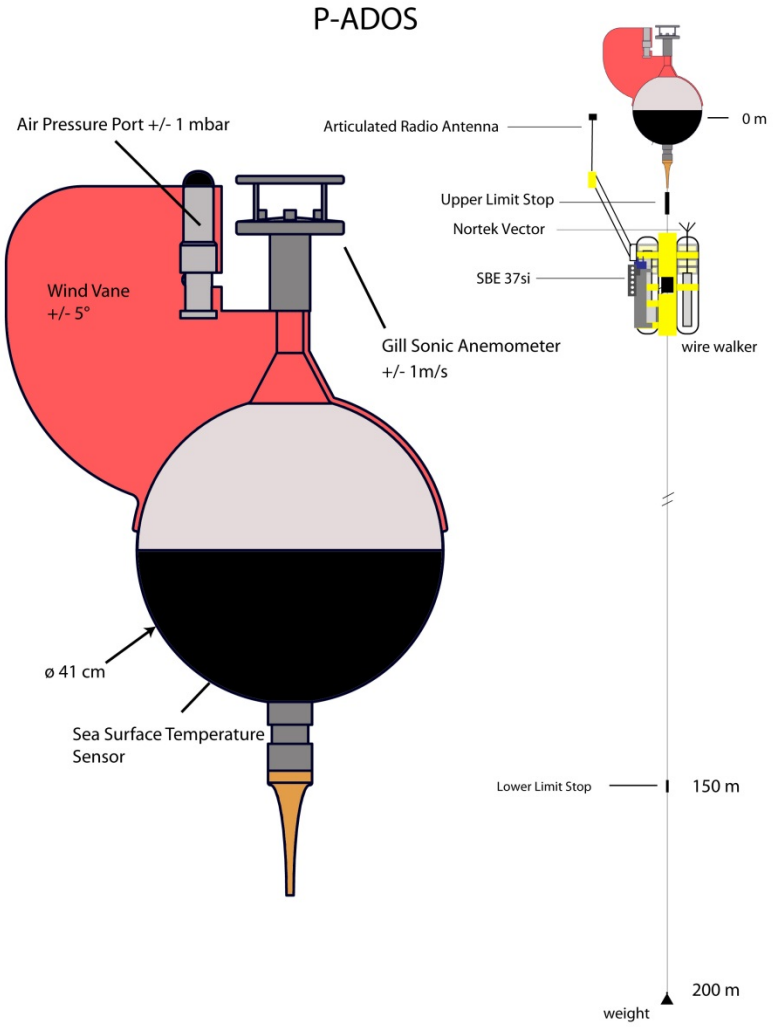
$$\langle Ds/Dt \rangle = \langle U_{drifter} \rangle \cdot \nabla \langle S \rangle + \langle U' \cdot \nabla S' \rangle$$

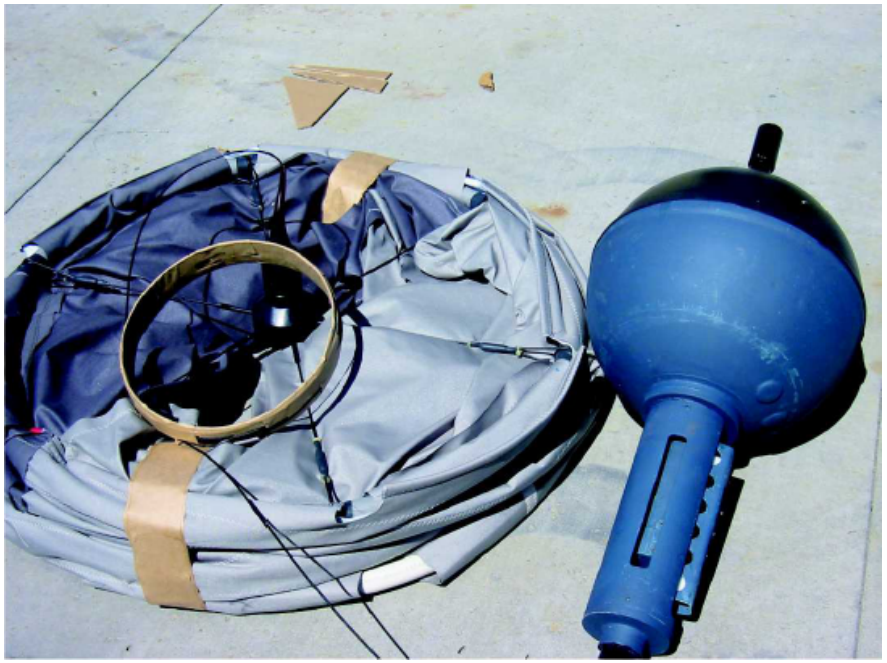
WHAT

Scientific Objectives

- ***Objective 1):*** To determine the depth to which wind driven currents penetrate in the region and to provide profiles of this flow for verification of HYCOM and ROMS simulations of the shallow overturning cell (i.e. calculate the depth where the surface stress vanishes and the geostrophic circulation prevails using wind and momentum content observations that deviate from quasi-geostrophic balance)
- ***Objective 2:*** To compute the near surface convergence of eddy fluxes of salt and temperature and their divergence from Lagrangian (i.e. water following) drifter SSS and velocity observations;
- ***Objective 3):*** Develop a new profiling drifter with salinity profile measurement that can also be used as remote air or ship deployed shallow water mooring (SPURS's legacy!).

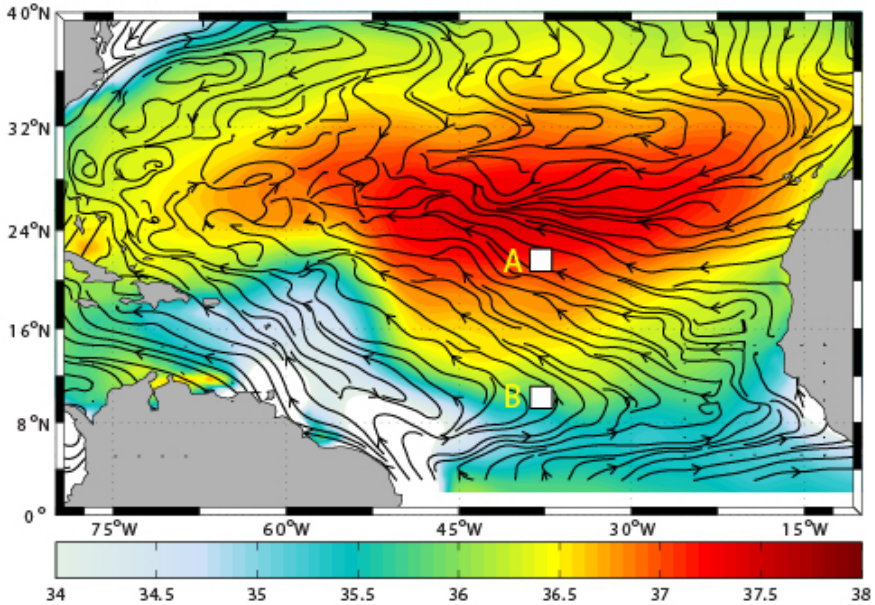
HOW The ADOS drifter with "Wire-Walker" and SVP- SSS Drifter-both are RT devices



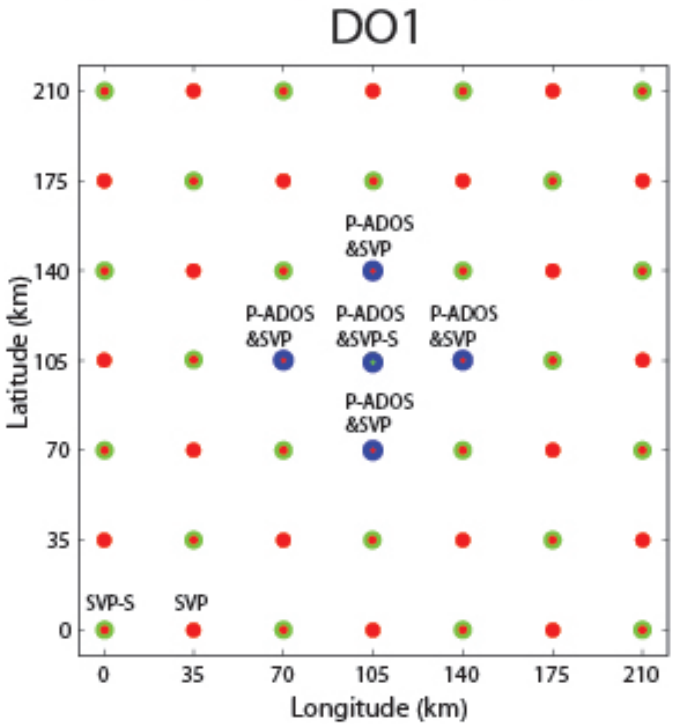


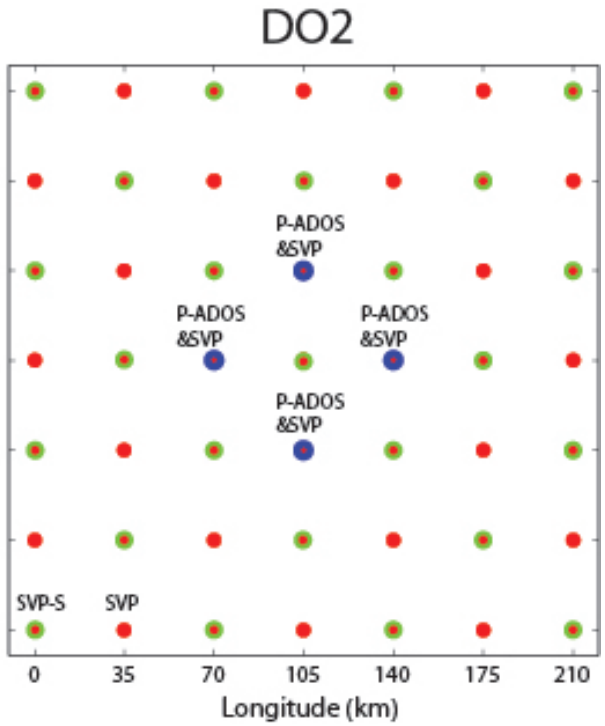
SSS accurate within 0.02 for the first several months.

HOW



1) Probably need to redeploy SVPs every 1.5 months around P-ADOS;
2) Start with mesoscale (200 km) and let them disperse to large scale;
3)OK to send crude QC data in NRT to SPURS data management system.





WHEN

Target and duration: start in October 2012 for 4-5 months;

75 SSS drifters+72 SVP **already funded** through the SIO/ NOAA GDP (FY'10) or planned (FY'11);

NSF (submitted): 8 P-ADOS/Salaries for Engineers, fieldwork, little analysis, no shiptime (if it fails no salary support for SIO drifters @ SPURS);

Shiptime (underway + deployment-intermediate class is OK-piggybacking is OK):
Deployment cruise: 3.5 days /1 body from SIO/can help)
2 re-deployment cruises (1.5 – 2 months apart) : 3 days each /1 body from SIO/can help
1 recovery cruise (if possible): 1 body from SIO + 1 help